

TVA 2005 Transmission Customer Conference

System Tools and Wide Area
Visibility

Wide Area Visibility

- Objectives

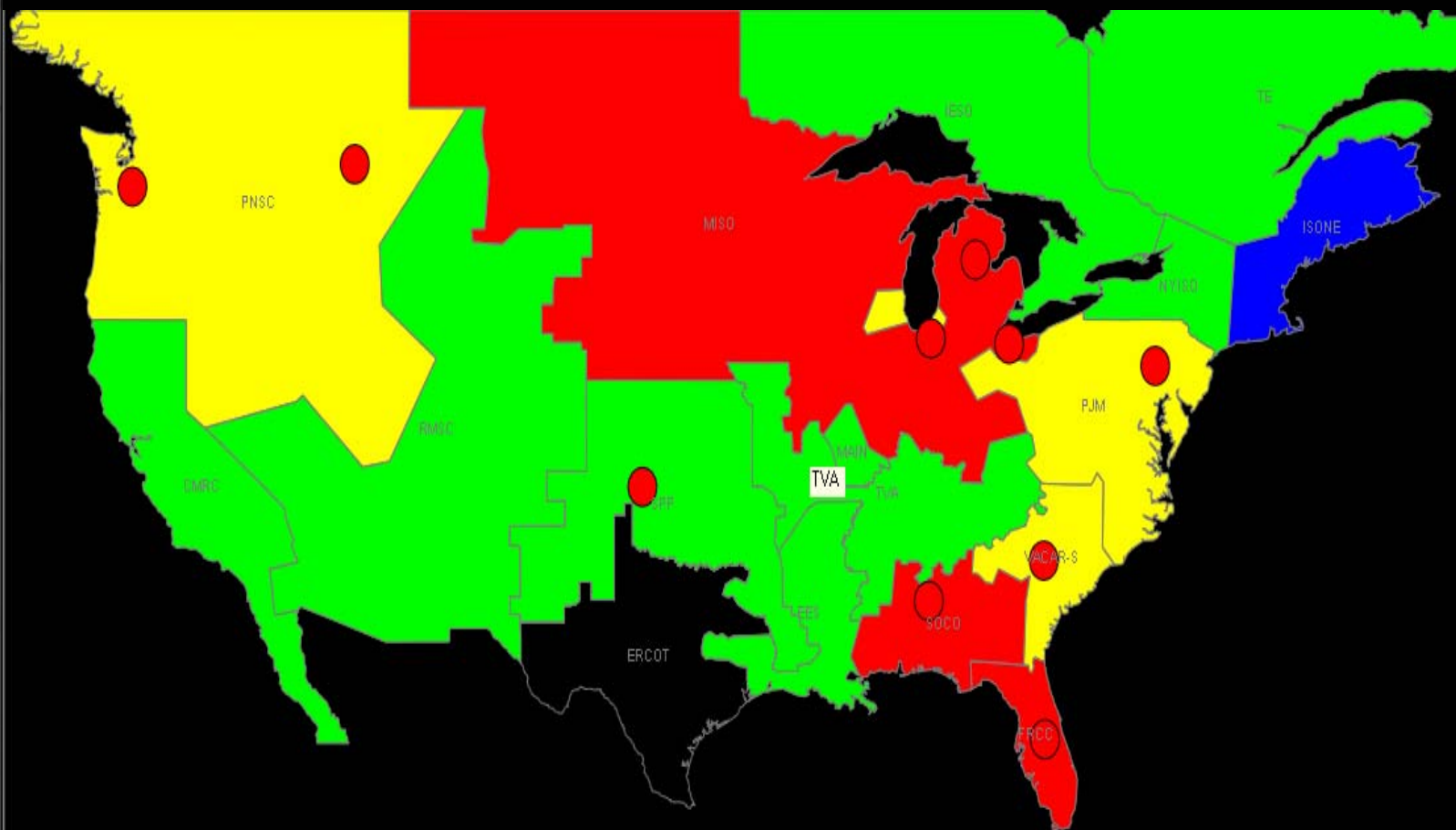
- Provide system operators with real-time wide area information to increase situational awareness
- Monitor across the entire Eastern Interconnection (EI) for reliability, stability, system dynamics, and other key metrics
- Enhance regional reliability through data exchange and coordination

- Tools

- Advanced Network Applications
- ACE & Frequency Monitoring
- Eastern Interconnection Phasor Project

- ESO operates two separate Advanced Network Application (ANA) Systems – *State Estimators*
 - Siemens (Telegyr) – TVA model with selected critical external locations
 - AREVA – Full TVA Reliability Area (TVA, AECL, BREC, EKPC, EEI) model; with selected critical external locations
- AREVA ANA system
 - Runs every 5 minutes with automatic CA every cycle
 - Can handle up to 50,000 bus model and 3000+ contingencies
 - Receives real-time data from ICCP connections
 - Will soon be expanded to perform Transient and Voltage stability analysis in real-time.

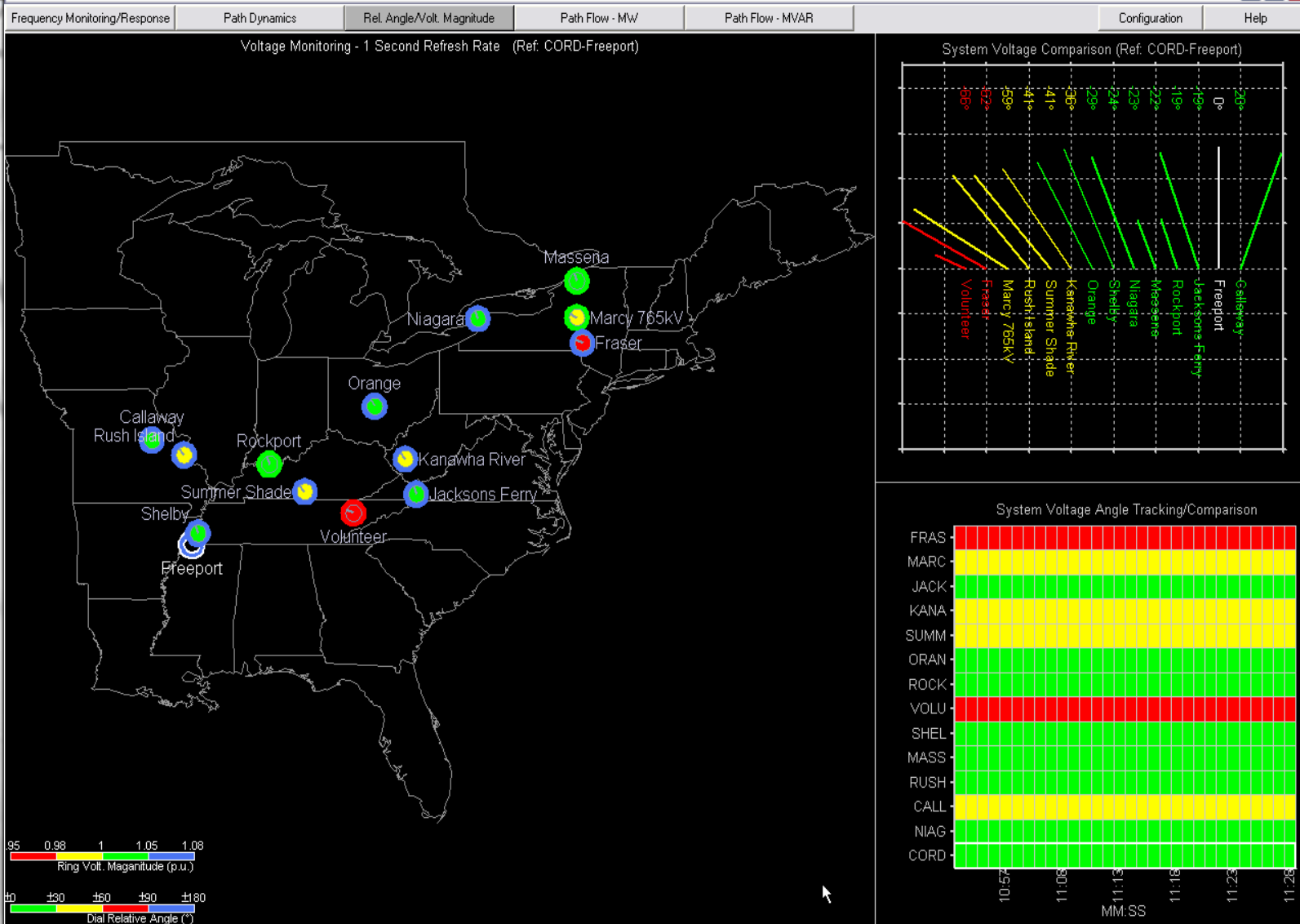
ACE Monitoring - RC



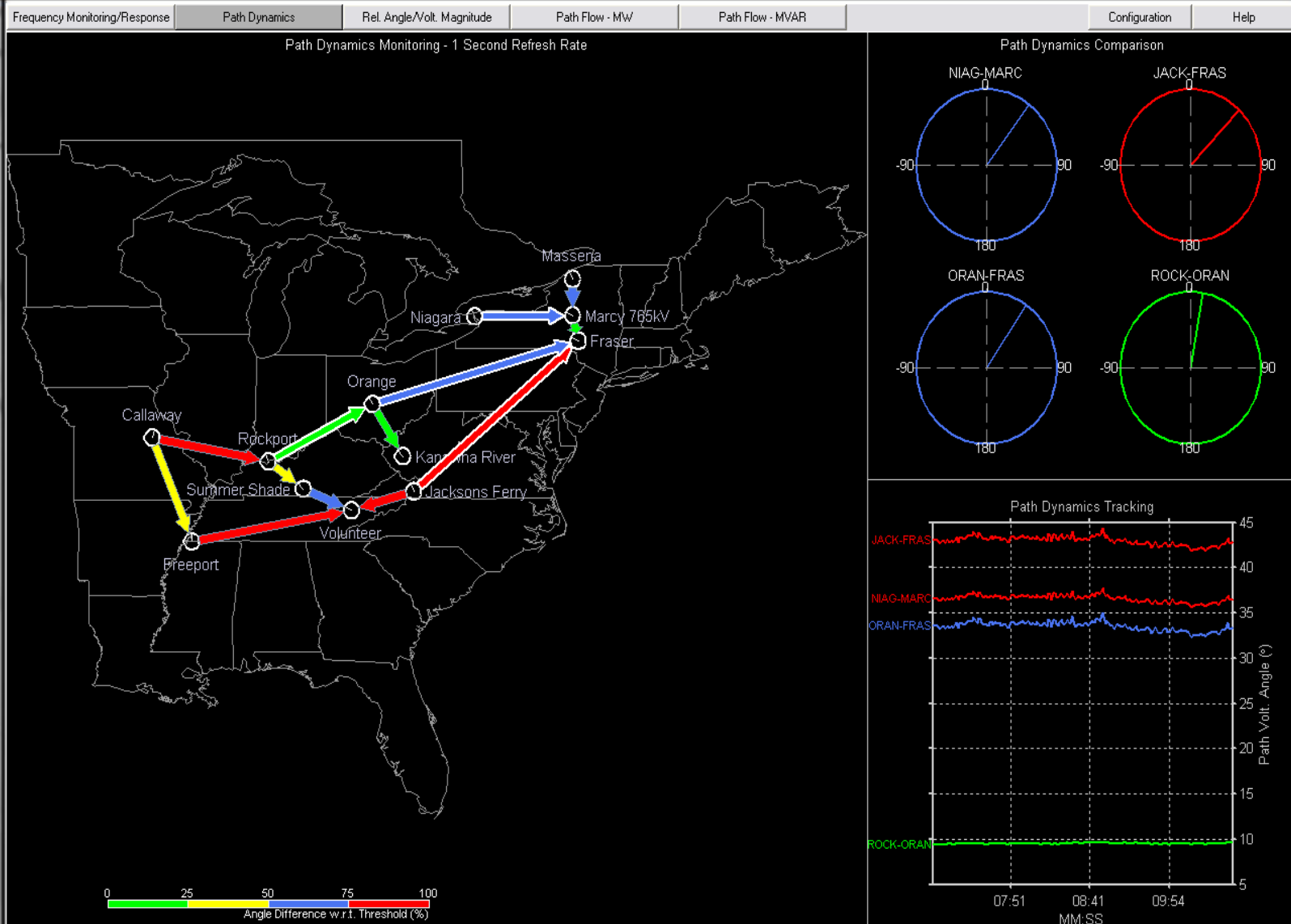
Reliability Coordinator - 10 Worst ACE



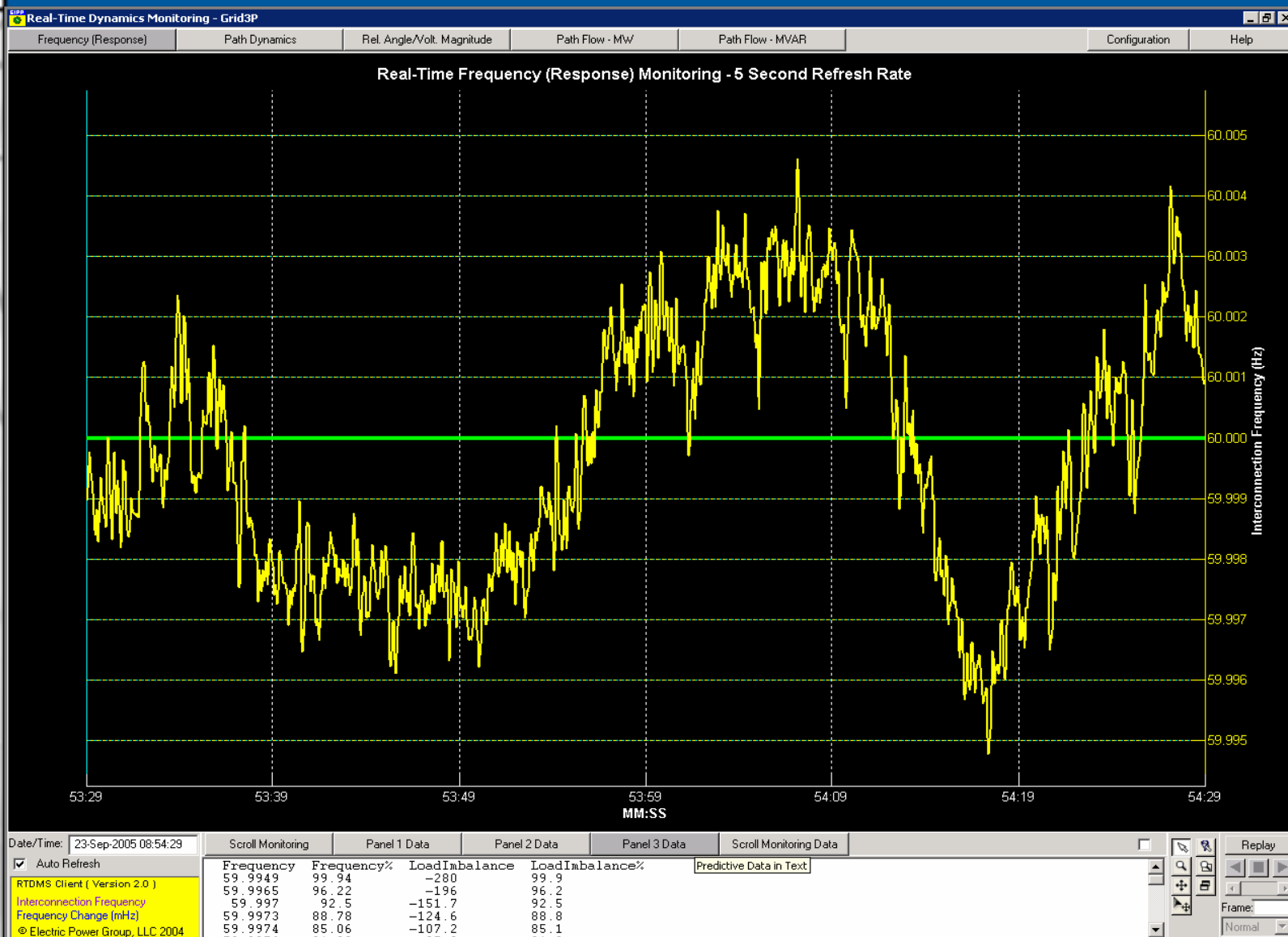
Phase Angle Monitoring



Power Transfer Modeling

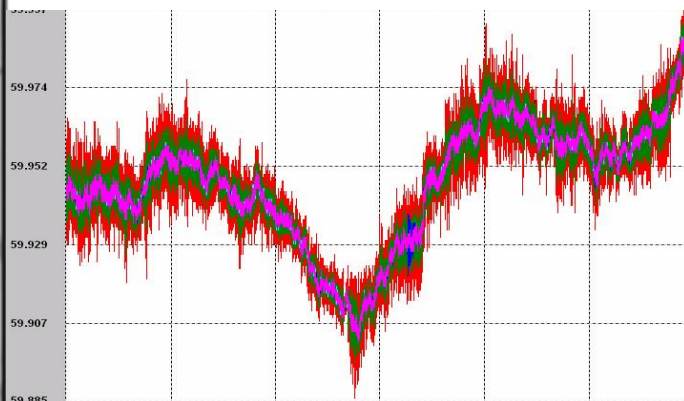


Frequency Monitoring

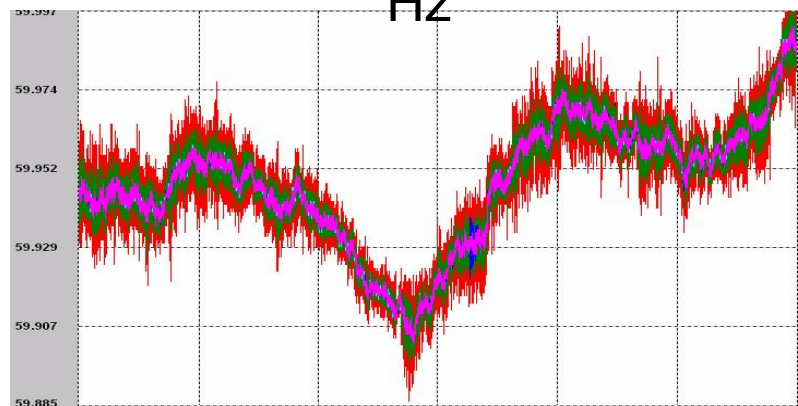


Recent Frequency Excursions

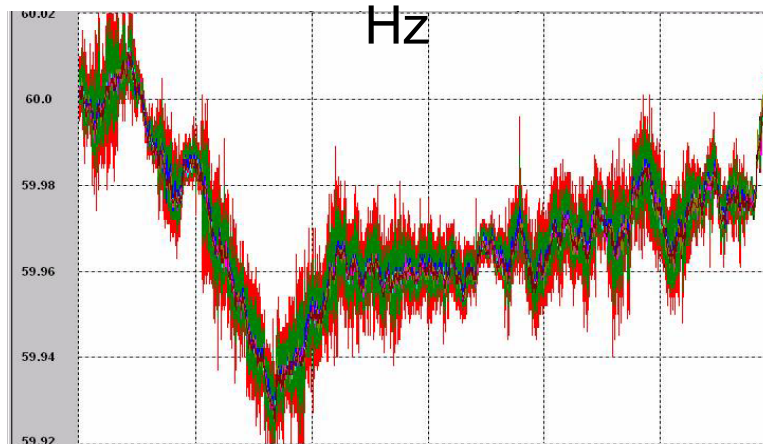
August 24, 2005 – 59.885 Hz



September 8, 2005 – 59.91 Hz



September 15, 2005 – 59.92 Hz



Wide Area Visibility Benefits

- “Defense in Depth” philosophy for system monitoring and reliability analysis
- System Operations coordination and communication
- Optimize system utilization while ensuring Grid reliability

TVA 2005 Transmission Customer Conference

Introduction of Break-out sessions

Session Objectives

- Overview key TVA business processes
- Create a forum for discussion
- Listen to feedback on TVA's business processes
- Evaluate information gathered for potential improvement areas

Break-out Session 1 – East Room

- Balancing Authority Operations -- Edd Forsythe
 - Process Overview
 - Ramping Consideration and Improvement Opportunities
 - Questions & Answers

- Available Transmission/Flowgate Capacity – Doug Bailey
 - Review Process for Establishing Interface Transfer Limits
 - Status Update Flowgate Analysis Process
 - Questions & Answers

Break-out Session 3 – Plaza A/B

- OASIS Reservations and Scheduling – Randal Haynes and Rocky Roberts
 - Transmission Service Arrangements
 - OASIS Administration
 - Transaction Scheduling
 - Questions & Answers

Break-out Session 4 – West Room

- Transmission Planning Q&A – Jim Whitehead
 - Questions & Answers from the General Session presentation

Break-out Schedule

- First session 2:00 – 2:45 pm
- Break (with refreshments)
- Second session 3:00 – 3:45 pm
- Third session 4:00 – 4:45 pm
- Final wrap-up and evening logistics at 4:45 pm